CLAIMS

1. A method for wireless communication for a user equipment (UE), comprising: receiving information associated with a time-division duplex (TDD) frame structure for narrowband communications, the TDD frame structure including a set of contiguous uplink subframes; determining an orthogonal sequence length of a reference signal (RS) based on at least one of a number of contiguous uplink subframes in the TDD frame structure or a number of slots in the set of contiguous uplink subframes; and transmitting the RS using the determined orthogonal sequence length.

2. A method for wireless communication for a user equipment (UE), comprising: receiving information associated with a time-division duplex (TDD) frame structure for narrowband communications; determining a sequence hopping pattern of a reference signal (RS) based on at least one of a number of uplink subframes, a number of slots in a set of contiguous uplink subframes of the TDD frame structure, or a least significant bit of a radio frame number; and transmitting the RS using the determined sequence hopping pattern.

3. An apparatus for wireless communication for a user equipment (UE), comprising: means for receiving information associated with a time-division duplex (TDD) frame structure for narrowband communications, the TDD frame structure including a set of contiguous uplink subframes; means for determining an orthogonal sequence length of a reference signal (RS) based on at least one of a number of contiguous uplink subframes in the TDD frame structure or a number of slots in the set of contiguous uplink subframes; and means for transmitting the RS using the determined orthogonal sequence length.

4. An apparatus for wireless communication for a user equipment (UE), comprising: means for receiving information associated with a time-division duplex (TDD) frame structure for narrowband communications; means for determining a sequence hopping pattern of a reference signal (RS) based on at least one of a number of uplink subframes, a number of slots in a set of contiguous uplink subframes of the TDD frame structure, or a least significant bit of a radio frame number; and means for transmitting the RS using the determined sequence hopping pattern.

5. An apparatus for wireless communication for a user equipment (UE), comprising: a memory; and at least one processor coupled to the memory and configured to: receive information associated with a time-division duplex (TDD) frame structure for narrowband communications, the TDD frame structure including a set of contiguous uplink subframes; determine an orthogonal sequence length of a reference signal (RS) based on at least one of a number of contiguous uplink subframes in the TDD frame structure or a number of slots in the set of contiguous uplink subframes; and transmit the RS using the determined orthogonal sequence

length.

6. An apparatus for wireless communication for a user equipment (UE), comprising: a memory; and at least one processor coupled to the memory and configured to: receive information associated with a time-division duplex (TDD) frame structure for narrowband communications; determine a sequence hopping pattern of a reference signal (RS) based on at least one of a number of uplink subframes, a number of slots in a set of contiguous uplink subframes of the TDD frame structure, or a least significant bit of a radio frame number; and transmit the RS using the determined sequence hopping pattern.

7. A non-transitory computer-readable medium storing computer executable code for a user equipment (UE), comprising code to: receive information associated with a time-division duplex (TDD) frame structure for narrowband communications, the TDD frame structure including a set of contiguous uplink subframes; determine an orthogonal sequence length of a reference signal (RS) based on at least one of a number of contiguous uplink subframes in the TDD frame structure or a number of slots in the set of contiguous uplink subframes; and transmit the RS using the determined orthogonal sequence length.

8. A non-transitory computer-readable medium storing computer executable code for a user equipment (UE), comprising code to: receive information associated with a time-division duplex (TDD) frame structure for narrowband communications; determine a sequence hopping pattern of a reference signal (RS) based on at least one of a number of uplink subframes, a number of slots in a set of contiguous uplink subframes of the TDD frame structure, or a least significant bit of a radio frame number; and transmit the RS using the determined sequence hopping pattern.

9. The method of claim 1, wherein the orthogonal sequence length of the RS is determined based on the number of contiguous uplink subframes in the TDD frame structure.

10. The method of claim 1, wherein the orthogonal sequence length of the RS is determined based on the number of slots in the set of contiguous uplink subframes.

11. The method of claim 1, wherein transmitting the RS includes transmitting two pilots per slot.

12. The method of claim 2, wherein the sequence hopping pattern of the RS is selected based on the number of uplink subframes in the TDD frame structure.

13. The method of claim 2, wherein the sequence hopping pattern of the RS is selected based on the number of slots in a set of contiguous uplink subframes of the TDD frame structure.

14. The method of claim 2, wherein the sequence hopping pattern of the RS is selected based on

the least significant bit of the radio frame number.

15. The apparatus of claim 3, wherein the means for determining the orthogonal sequence length is further configured to determine the orthogonal sequence length of the RS based on the number of contiguous uplink subframes in the TDD frame structure.

16. The apparatus of claim 3, wherein the means for determining the orthogonal sequence length is further configured to determine the orthogonal sequence length of the RS based on the number of slots in the set of contiguous uplink subframes.

17. The apparatus of claim 4, wherein the means for determining the sequence hopping pattern is further configured to select the sequence hopping pattern of the RS based on the number of uplink subframes in the TDD frame structure.

18. The apparatus of claim 4, wherein the means for determining the sequence hopping pattern is further configured to select the sequence hopping pattern of the RS based on the least significant bit of the radio frame number.

19. The apparatus of claim 5, wherein the at least one processor is further configured to determine the orthogonal sequence length of the RS based on the number of contiguous uplink subframes in the TDD frame structure.

20. The apparatus of claim 5, wherein the at least one processor is further configured to determine the orthogonal sequence length of the RS based on the number of slots in the set of contiguous uplink subframes.

21. The apparatus of claim 6, wherein the at least one processor is further configured to select the sequence hopping pattern of the RS based on the number of uplink subframes in the TDD frame structure.

22. The apparatus of claim 6, wherein the at least one processor is further configured to select the sequence hopping pattern of the RS based on the least significant bit of the radio frame number.